

Amendment and Reply

Applicant: Jerry Rolia et al.

Serial No.: 10/698,769

Filed: October 31, 2003

Docket No.: 200300266-1

Title: METHOD AND SYSTEM FOR GOVERNING ACCESS TO COMPUTING UTILITIES

IN THE CLAIMS

Please amend claims 1, 14 and 27 as follows:

1. (Currently Amended) A method of governing access to resources in a computing utility facility, comprising:

providing a processor for receiving a demand profile associated with an application that identifies the resources required from a pool of resources in the computing utility facility during one or more demand cycles;

admitting an application to the computing utility facility if resources required for the application can be provided from the pool of resources in accordance with the demand profile and associated one or more demand cycles; ~~and~~

assigning available resources from the pool of resources in response to a request from the applications admitted to the computing utility facility; and

policing requests for resources from the admitted applications and intercepting applications if the resources being requested are outside an acceptable range.

2. (Original) The method of claim 1 wherein admitting the application further comprises:

unfolding the one or more demand cycles from the demand profile associated with the application into time slots requiring resources from the pool of resources;

comparing the time slots requiring resources with a staging calendar of time slots representing availability of resources in the pool of resources; and

converting time slots from the staging calendar to a permanent calendar when comparison indicates the time slots requiring resources from the demand profile are available for assignment.

3. (Original) The method of claim 2 wherein unfolding the one or more demand cycles includes a caveat time cycle based upon an event that occurs over a long-period of time and is selected from a set including special events, holidays, seasonal occurrences and emergencies.

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4. (Original) The method of claim 3 wherein the caveat time cycle is based upon knowing when at least one particular event is going to occur in the future.
5. (Original) The method of claim 2 wherein unfolding the one or more demand cycles includes a demand cycle describing a demand for resources from a resource pool during weekdays and another demand cycle describing another demand for resources during weekends.
6. (Original) The method of claim 2 wherein converting time slots from the staging calendar to a permanent calendar comprises:
 - copying the time slots from the staging calendar to the permanent calendar; and
 - preallocating the requested resources from the pool of resources according to the permanent calendar schedule.
7. (Original) The method of claim 2 wherein converting time slots from the staging calendar to a permanent calendar comprises:
 - indicating the time slots in the staging calendar associated with the requested resources are permanent and not for staging purposes; and
 - pre-allocating the requested resources from the pool of resources according to the permanent calendar schedule.
8. (Original) The method of claim 1 further comprising:
 - policing requests for resources from the admitted applications to determine if the resources being requested are within an acceptable range.
9. (Original) The method of claim 8 further comprising:
 - intercepting a request for resources from an application admitted to access a pool of resources;
 - determining if resource request is within an acceptable range of demands based upon the demand profile of the application;

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indicating an application is not entitled to the request when the determination indicates the request is outside the acceptable range of demands; and

indicating an application is entitled to the request when the determination indicates an application is within the acceptable range of demands.

10. (Original) The method of claim 1 further comprising arbitrating the allocation of limited resources between two or more applications entitled to receive the requested resources.

11. (Original) The method of claim 10 wherein the arbitration comprises:
detecting a conflict in providing requested resources to two or more admitted applications entitled to receive the requested resources;
determining if at least one application can forego receiving the requested resources causing the conflict for a predetermined period of time;
instructing the at least one application to forego receipt of the requested resources for a period of time in accordance with the determination;
allocating resources to the remaining admitted applications entitled to receive the requested resources in accordance with a priority scheme.

12. (Original) The method of claim 11 wherein the priority scheme includes selecting admitted applications to receive the requested resources on a first-come-first-serve basis.

13. (Original) The method of claim 11 wherein the priority scheme includes selecting admitted applications to receive the requested resources in according to economic and class of services factors.

14. (Currently Amended) An apparatus for governing access to resources in a computing utility facility, comprising:
a processor capable of executing instructions;
a memory containing instructions when executed cause the processor to receive a demand profile associated with an application that identifies the resources required from a

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pool of resources in the computing utility facility during one or more demand cycles, admit an application to the computing utility facility if resources required for the application can be provided from the pool of resources in accordance with the demand profile and associated one or more demand cycles; and assign available resources from the pool of resources, ~~including at least a plurality of resources from the group comprising storage devices, processors, graphics rendering processors and network nodes,~~ in response to a request from the applications admitted to the computing utility facility; and
wherein the demand profile associated with an application is created through data collection or statistical estimation.

15. (Original) The apparatus of claim 14 wherein the instructions that admit the application further comprises instructions that:

unfold the one or more demand cycles from the demand profile associated with the application into time slots requiring resources from the pool of resources, compare the time slots requiring resources with a staging calendar of time slots representing availability of resources in the pool of resources and convert time slots from the staging calendar to a permanent calendar when comparison indicates the time slots requiring resources from the demand profile are available for assignment.

16. (Original) The apparatus of claim 15 wherein the instructions that unfold the one or more demand cycles also includes in the one or more demand cycles a caveat time cycle based upon an event that occurs over a long-period of time and is selected from a set including special events, holidays, seasonal occurrences and emergencies.

17. (Original) The apparatus of claim 16 wherein the caveat time cycle processed by the instructions is based upon knowing when at least one particular event is going to occur in the future.

18. (Original) The apparatus of claim 15 wherein the instructions that unfold the one or more demand cycles includes a demand cycle describing a demand for resources from a

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resource pool during weekdays and another demand cycle describing another demand for resources during weekends.

19. (Original) The apparatus of claim 15 wherein the instructions that convert time slots from the staging calendar to a permanent calendar further comprises instructions that:

copy the time slots from the staging calendar to the permanent calendar and preallocate the requested resources from the pool of resources according to the permanent calendar schedule.

20. (Original) The apparatus of claim 15 wherein the instructions that convert time slots from the staging calendar to a permanent calendar further comprises instructions that:

indicate the time slots in the staging calendar associated with the requested resources are permanent and not for staging purposes and preallocate the requested resources from the pool of resources according to the permanent calendar schedule.

21. (Original) The apparatus of claim 14 further comprising instructions that:

police requests for resources from the admitted applications to determine if the resources being requested are within an acceptable range.

22. (Original) The apparatus of claim 21 further comprising instructions that:

intercept a request for resources from an application admitted to access a pool of resources, determine if the resource request is within an acceptable range of demands based upon the demand profile provided by the application, indicate that an application is not entitled to the request when the determination indicates the request is outside the acceptable range of demands and indicate that an application is entitled to the request when the determination indicates an application is within the acceptable range of demands.

23. (Original) The apparatus of claim 14 further comprising instructions that:

arbitrate an allocation of limited resources between two or more applications entitled to receive the requested resources.

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24. (Original) The apparatus of claim 23 wherein the instructions that arbitrate further comprises instructions that:

detect a conflict in providing requested resources to two or more admitted applications entitled to receive the requested resources, determine if at least one application can forego receiving the requested resources causing the conflict for a predetermined period of time, instruct the at least one application to forego receipt of the requested resources for a period of time in accordance with the determination, and allocate the resources to the remaining admitted applications entitled to receive the requested resources in accordance with a priority scheme.

25. (Original) The apparatus of claim 24 wherein the instructions implementing the priority scheme further comprises instructions that select admitted applications to receive the requested resources on a first-come-first-serve basis.

26. (Original) The apparatus of claim 24 wherein the instructions implementing the priority scheme further comprises instructions that select admitted applications to receive the requested resources in according to economic and class of services factors.

27. (Currently Amended) An apparatus for governing access to resources in a computing utility facility, comprising:

processor means for receiving a demand profile associated with an application that identifies the resources required from a pool of resources in the computing utility facility during one or more demand cycles;

processor means for admitting an application to the computing utility facility if resources required for the application can be provided from the pool of resources in accordance with the demand profile and associated one or more demand cycles; ~~and~~

processor means for assigning available resources from the pool of resources in response to a request from the applications admitted to the computing utility facility; and

means for policing requests for resources from the admitted applications and intercepting applications if the requested resources are outside an acceptable range.